The Thai Anesthesia Incidents Study (THAI Study) of Perioperative Death : Analysis of Risk Factors

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Background : *National statistical data of mortality and morbidity related to anesthesia have not been reported. The need to comprehensively examine the cause of death as well as other adverse events prompted the first national study in Thailand.*

Material and Method *: In the Thai Anesthesia Incidents Study (THAI Study), a prospectively defined cohort of patients who underwent anesthesia from February 1, 2003 to January 31,2004 (n=163,403) was studied. All consecutive patients who died intraoperatively or within the period of 24 hr after anesthesia were classified to determine a relationship with anesthesia by 3 independent reviewers. These data were further analysed to identify contributing factors.*

Results : *The incidence of 24-hr perioperative death, anesthesia directly related and anesthesia partially related death per 10,000 anesthetics was 28.2 (95% CI 25.7-30.8), 1.7 (95% CI 1.1-2.3) and 4.0 (95% CI 3.1-5.0) respectively. Of 462 deaths, 28 cases (6.5%), 66 cases (14.3%), 61 cases (3.3%), 399 cases (86.7%) and 104 cases (22.6%) were anesthesia directly related, anesthesia partially related, surgical related, patient disease related and system or management related to perioperative death. The common main causes of death were exangination (42.4%), traumatic brain injury (14.3%), sepsis (13.6%), heart failure (5.0%) and hypoxia (5.0%).*

Conclusion : *This study shows incidence of 24-hr perioperative death of 1:354 which is comparable with other studies. Quality assurance activity, prevention of human failure and equipment failure, system improvement of perioperative care, availability of recovery room, intensive care unit, efficient blood bank and adequate number of MD. anesthesiologists are suggestive corrective strategies.*

Keywords : *Anesthesia, Mortality, Complication, Risk, Quality, Epidemiology*

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Death associated with anesthesia was first reported in 1847[1]. In 1954 Beecher and Todd published what that was then by for the most extensive study of anesthesia mortality in the United States.[2] Concerns over the numbers of deaths attributed to anesthesia in the United States were shared by the international community and resulted in a number of publications from South Africa[3], France[4], Australia[5], Canada[6], England including the voluntary Confidential Enquiry into Perioperative Deaths[7]. In 1993 an analysis of cases with cardiac arrest and death from the first 2000 incidents reported to the Australian Incident Monitoring Study[8] was reported. This was followed by studies on fatal and nonfatal cardiac arrest in France[9] in 2001 and anesthesia related mortality in Japan[10] in 2003. Since statistical data of anesthetic mortality and morbidity, which would objectively illustrate the state of

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clinical achievement in Thailand, are absent, the Royal College of Anesthesiologists of Thailand host the Thai Anesthesia Incidents Study (THAI Study) in 2003.[11,12] The aims of this study was to investigate the cause of perioperative death with 24 hr postoperatively.

Material and Method

Base upon the Thai Anesthesia Incidents Study (THAI Study),[11,12] a multicentered study among 20 hospitals (7 university, 4 general, 5 tirtiary or regional, 4 general and 4 district hospitals) across the country, with approvals from institutional ethic review boards, data were gathered between February 2003 to January 2004. The data consisted of patients characteristics, surgical procedure or site of operation, anesthesia profiles and anesthesia related adverse outcomes including perioperative death within 24 hr postoperatively. The attending anesthesia personnel or site managers were requested to fill in the preplanned structured data-entry form (form 1) in addition to the usual anesthetic record. Whenever perioperative death (intraoperative to 24 hr postoperative period) occurred the details of events were recorded in a data entry form (form 2) specific for cardiac arrest or death. For the purpose of analysis, timing of adverse events was divided into three periods : intraoperative, recovery room and 24 hr postoperative periods. All forms were reviewed by research nurses and/or site managers for completeness. Correction were then made by each centre including the verification of event recorded. In addition, further data quality checks and the addition of missing data were made at the end of the data collection period by the site managers.

Data collection and analysis. All form 1 from each hospital were keyed in at the data management centre with double-entry technique to ensure the reliability of the data base. All form 2 (cardiac arrest or death specific form) and anesthetic recorded were reviewed by 3 independent senior anesthesiologists and were asked to provide their assessment of the primary cause and secondary cause (if presented) of death as due to (1) anesthesia (directly related, partially related, undetermined and non-related) (2) surgery (3) patient s disease or condition (4) management or system such as nonavailable intensive care unit or nonavailable blood transfusion). The assessors were also asked to assess the contributing factors, factors minimizing incidents and suggested corrective strategies for anesthesia directly or partially related perioperative death. Descriptive statistics was used for analysis of the data. Chi-square test was used to compared categorical data, P value 0.05 was considered to be significant.

Results

In this study, there were 163403 consecutive anesthetic cases during 12 months periods (between February 2003 to January 2004), including both inpatients and outpatients in 20 hospitals. A total of 462

Table 1. Demographic, surgical and anesthetic characteristics of patients with perioperative death stratified by types of hospitals

	University hospital n = 171	**Regional hospital n = 225**	**General hospital n = 66**	**Total**
Age (yr)	44.3 (26.1)	41.6 (21.5)	48.3 (20.6)	43.5 (23.2)
Weight (kg)	50.4 (21.8)	55.5 (15.7)	57.8 (14.1)	53.9 (18.2)
Height (cm)	144.9 (39.1)	157.8 (19.7)	160.1 (7.9)	154.6 (26.1)
Gender : male	110 (64.3%)	161 (71.5%)	45 (66.2%)	316 (68.3%)
female	61 (35.6%)	64 (28.4%)	21 (31.8%)	146 (31.6%)
Emergency (cases)	141 (83.9%)	201 (89.3%)	53 (80.3%)	395 (86.1%)
Duration of anesthesia (min)	151.6 (138.1)	91.8 (67.8)	101.4 (73.0)	115.1 (103.8)
Main anesthetic technique				
• **GA**	156 (91.2%)	197 (87.6%)	56 (84.8%)	409 (88.5%)
• **GA(TIVA)**	3 (1.8%)	0 (0.0%)	1 (1.5%)	4 (1.9%)
• **Spinal anesthesia**	2 (1.2%)	4 (1.8%)	5 (7.6%)	11 (2.4%)
• **MAC**	10 (5.8%)	24 (10.7%)	4 (6.1%)	38 (8.2%)

Value shown as mean(SD), number (%)
GA = General anesthesia, TIVA = Total intravenous anesthesia
MAC = monitor anesthesia care

perioperative deaths within 24 hr postoperative period were identified from the THAI Study database. Overall incidence of death from all causes was 28.3 per 10000 anesthetics. There was no death in the district hospitals. Demographic characteristics and surgical condition of the patients with perioperative death are shown in Table 1. The American Society of Anesthesiologists classification of physical status (ASA PS) of all cases and time of cardiac arrest detected were stratified according to types of hospitals with statistically significant different ($p<0.001$) as shown in Table 2.

According to opinions of 3 independent assessors who were senior anesthesiologists, the consensus of the main and secondary causes of death (if presented) is shown in Table 3. After reviewing both form 1 and form 2, the etiological factors of death due to anesthesia (directly related, partially related, undetermined and non-related), surgery, patient s disease or condition and management or system, were considered as shown in Table 4. The age groups of the patients with anesthesia directly and partially related death, are demonstrated in Figure 1. In all phases of anesthesia critical events most frequently occurred in postoperative period in 44 (46.8%) of 94 anesthesia-related death. In 25 (26.6%) deaths critical events occurred first during maintenance. Details of anesthetia phases which critical events began to occur are shown as Figure 2. Services and sites of operations or procedures of 94 cases of anesthesia related death are shown in Table 5. Among these cases, the ASA PS classification 1, 2, 3, 4 and 5 were : 2 cases (2.1%), 16 cases (17.0%), 35 cases (37.2%), 30 cases (31.9%) and 11 cases (11.7%) respectively; 70 cases (47.5%) were conducted as emergency condition. The anesthesia related problems, management and surgical problems in 94 cases anesthesia (directly and partially) related death are shown in Table 6. The contributing factors, factors minimizing incidents and suggested corrective strategies as assessed by the 3 reviewers are also demonstrated in Table 7.

Discussion

This report provides an insight into the origins and outcomes of anesthesia-related death under conditions of contemporary practices in Thai hospitals. No attempt was made to distinguish adverse events that may be attributable to the surgical procedure rather than to the anesthetic. However, the main focus of the THAI Study is to examine the consequences of the surgical process that have a high likeli-

Table 2. The ASA physical status classification of patients with perioperative death and time of events stratified by types of hospitals

	University hospital n = 171	Regional hospital n = 225	General hospital n = 66	Total n=462
• **ASA PS***				
1	1 (0.6%)	3 (1.3%)	1 (1.5%)	5 (1.1%)
2	11 (6.4%)	8 (3.6%)	15 (22.7%)	34 (7.4%)
3	39 (22.8%)	49 (21.8%)	10 (15.2%)	98 (21.2%)
4	65 (38.0%)	95 (42.2%)	24 (36.4%)	184 (39.5%)
5	55 (32.2%)	70 (31.1%)	16 (24.2%)	141 (30.5%)
• **Time of cardiac arrest detected**				
none	6 (3.5%)	12 (5.3%)	2 (3.0%)	20 (4.3%)
intraoperative	72 (42.1%)	44 (19.6%)	20 (30.3%)	136 (29.4%)
recovery room	3 (1.8%)	3 (1.3%)	1 (1.5%)	7 (1.5%)
24 hr postoperative	89 (52.0%)	162 (73.3%)	40 (60.6%)	294 (63.6%)
intraoperative + 24 hr postoperative	1 (0.6%)	1 (0.4%)	2 (3.0%)	4 (0.9%)
recovery room + 24 hr postoperative	0 (0.0%)	0 (0.0%)	1 (1.5%)	1 (0.2%)

Value shown as number of case (%)
ASA PS = American Society of Anesthesiologists classification of physical status
* $p<0.001$ by Pearson Chi-Square

Table 3. Main and secondary causes of death by consensus of 3 assessors of perioperative death from more common to less frequent causes

	Main causes of death (n=462)		
1.	Exangination	196	42.4%
2.	Severe traumatic brain injury	66	14.3%
3.	Sepsis	63	13.6%
4.	Heart failure	23	5.0%
5.	Hypoxemia	22	5.0%
6.	Nontraumatic central nervous system injury	20	4.0%
7.	Prolonged shock	10	2.0%
8.	Suspected myocordial ischemia or infarction	8	2.0%
9.	Multiple trauma	7	2.0%
10.	Hypoventilation	7	2.0%
	Secondary causes of death (n=109)		
1.	Multiple trauma	19	17.1%
2.	Severe traumatic brain injury	14	13.0%
3.	Prolonged shock	14	13.0%
4.	Metabolic cause	12	11.0%
5.	Hypoxia	9	8.0%
6.	Bleeding	4	7.0%
7.	Heart failure	8	7.0%
8.	Sepsis	6	6.0%
9.	Suspected myocardial ischemia or infarction	4	4.0%
10.	Surgical technical error	4	4.0%

Table 4. Incidence of etiologic factors death and preventability of perioperative death

Etiologic factor	University hospital n = 171	Regional hospital n = 225	General hospital n = 66	Total n=462
• Anesthesia				
- directly related	9 (5.3%)	13 (5.8%)	6 (9.1%)	28 (6.1%)
- partially related	21 (12.3%)	37 (16.4%)	8 (12.1%)	66 (14.3%)
- undetermined	7 (4.1%)	1 (0.4%)	1 (1.5%)	9 (1.9%)
- non-related	134 (78.4%)	174 (77.3%)	51 (77.3%)	359 (77.7%)
• Surgery*	34 (20.0%)	16 (7.1%)	11 (16.7%)	61 (13.3%)
• Patient disease or condition	143 (84.1%)	200 (89.3%)	56 (84.8%)	399 (86.7%)
• Management or system*	24 (14.1%)	60 (26.8%)	20 (30.3%)	104 (22.6%)
• Preventability of death				
- Preventable	24 (14.1%)	47 (20.9%)	10 (15.2%)	81 (17.5%)
- May be preventable death	29 (17.0%)	44 (19.6%)	11 (16.7%)	84 (18.2%)
- Non-preventable death	118 (69.0%)	134 (59.6%)	45 (68.2%)	297 (64.3%)

Value shown as number of case (%)
* $p<0.01$ by Pearson Chi-Square

hood of an anesthetic contribution. The time frame of the follow-up (24 hr) also makes it unlikely that many surgical problems would become manifest.

Because we were able to include 163,403 consecutive anesthetics during the first twelve months period, our approach was successful in obtaining suf-

Table 5. Services and sites of operations or procedures of patients with anesthesia (directly and partially) related death (n=94)

Services		
General abdominal surgery	39	(41.5%)
General non-abdominal surgery	8	(8.5%)
Neurosurgery	13	(13.8%)
Cardiothoracic surgery	9	(9.6%)
Orthopedic surgery	6	(6.4%)
Obstetric and gynecological surgery	6	(6.4%)
Ear-nose-throat surgery	6	(6.4%)
Vascular surgery	2	(2.1%)
Diagnostic procedure	2	(2.1%)
Pediatric surgery	2	(2.1%)
Dental surgery	1	(1.1%)
Sites of operations or procedures		
Upper abdomen	38	(40.4%)
Extremities	16	(17.0%)
Head	10	(10.6%)
Thorax	9	(9.6%)
Lower abdomen	8	(8.5%)
Trachea	5	(5.3%)
Neck	4	(4.3%)
Oral	1	(1.1%)
Spine	1	(1.1%)
Magnetic resonance imaging	1	(1.1%)
Endoscopy	1	(1.1%)

ficient prospective data for the investigations. Because serious complications such as perioperative death are rare, large numbers of patients are required. Thus studies like ours should carefully choose a large size of subjects enrolled. Studying too few patients provides results that have too little discriminatory power. Studying too many patients requires unaffordable luxuries in funding and time. However, it was not practical to follow up for 48 hr postoperatively in some hospitals. Hence, we agreed to limit the follow up to 24 hr postoperative period. In some instances, individual case logs were inspected by site managers and investigators. Nevertheless, the self-consistency of reports, the prospective character of the study, the voluntary participation and work ethic of the anesthesiologists and personnel, the focus on chosen important complications and the confidential, nonaccusatory style of data gathering caused us to conclude that the collected information was reliable.

The total number of reported death was 462 with estimated incidence of 24 hr perioperative death per 10,000 anesthetic of 28.3 (95% CI 25.7-30.8). Recently, anesthetic mortality was estimated to be as low as 0.05 per 10,000 anesthetics[13-15]. However, these results may be biased by study methods (voluntary reporting, closed claims analysis, classification of a small subset), the confusing definitions of overall, contributory or total anesthesia related or the postoperative observation period. We agreed with the report of Arbous et al.[16] that perioperative mortality in which anesthetic factors are involved was not as low as these estimates. Our results, however, are comparable with the data from recent studies applying a study method, classification and postoperative observation period similar to ours, in which estimated 24 hr perioperative mortality was 20 per 10,000 anesthetics, and anesthetic mortality rate of 1.9 - 7.0 per 10,000 anesthetic[3,17-20].

There were large variation in 24 hr perioperative mortality between different types of hospitals. There was no perioperative death in district hospitals because only minor cases and rather healthy patients were selected to be operated at hospitals of this level. The more serious cases were transferred to a higher level of hospitals. Sixty-eight percents of perioperative deaths were male with 86% of emergency anesthesia. One possible explanation was higher pro-

Table 6. Anesthesia related, management and surgical problems in anesthesia (directly and partially) related perioperative death (n=94)

Anesthesia related problems			
1.	Medication related events (relative overdose)	22	(23.4%)
2.	Uncontrolled hemodynamic status	17	(18.1%)
3.	Exangination	14	(14.9%)
4.	Uncontrolled hypoxia (loss of airway, unable to ventilate)	12	(12.8%)
5.	Early extubation	8	(8.5%)
6.	Inappropriate postanesthesia care	5	(5.3%)
7.	Total spinal block	2	(2.1%)
8.	Inadequate central lim monitoring	2	(2.1%)
9.	Endobronchial intubation	2	(2.1%)
10.	Pulmonary embolism	2	(2.1%)
11.	Pulmonary aspiration	1	(1.1%)
12.	Inadequate preoperative assessment	1	(1.1%)
13.	Complication associated with central venous access	1	(1.1%)
14.	Probable vagal reaction	1	(1.1%)
Management problems			
1.	Inadequate perioperative care	13	(13.8%)
2.	No intensive care unit available	11	(11.7%)
3.	Inadequate preoperative assessment and preparation	7	(7.4%)
4.	Inappropriate or unnecessary surgery	7	(7.4%)
5.	Blood bank problems (Inadequate blood stock or long duration of waiting)	3	(3.2%)
6.	Anesthesia personnel problems (no MD anesthesiologist, inappropriate staffing)	3	(3.2%)
7.	Referral system problem	1	(1.1%)
Surgical problems			
1.	Surgical failure	9	(9.6%)
2.	Surgical error (surgical tear, malanastomosis)	3	(3.2%)
3.	Extensive surgery	4	(4.3%)
4.	Other. surgical problems	3	(3.2%)

portion of male gender involved with emergency traumatic surgery which is one of the most important public health problems in Thailand.

General anesthesia alone was employed in most cases (90.4%), regional techniques and monitored anesthesia care were conducted in 2.4% and 8.2% respectively. This also corresponded to other studies.[6,16,21] The ASA PS classification of perioperative death patients were statistical significantly different ($p<0.001$). As expected, more perioperative deaths occurred in the higher ASA categories and in emergency procedures. There were higher proportion (24.2%) of ASA PS 1 and 2 patients with perioperative death in general hospital which one possible explanation was problem that the cause by the lack of MD anesthesiologists for supervision in these hospitals. Four hundred and twenty-two cases (91.2%) were ASA PS 3, 4, 5 patients. There were 5 cases (1.1%) and 34 cases (7.4%) of ASA PS classification 1 and 2 respectively. The mortality rate of ASA PS 1, 2, 3, 4 and 5 in this study were 0.01%, 0.06%, 0.56%, 5.73% and 38.11% respectively (Fig. 3). This also agreed with other studies.[6,22]

There were 20 cases (4.3%) of 24-hr perioperative death without cardiac arrest detected that represented some quality problems in the postoperative period. Two-thirds (63.6%) of patients had cardiac arrest within 24 hr postoperative period whereas nearly one-third (29.4%) of them had intraoperative cardiac arrest. Although only 7 cases (1.5%) developed cardiac arrest in the recovery room that anesthesia personnel should take sole responsibility in the postanesthesia care unit. There were few deaths that developed more than one time of cardiac arrest. Firstly, either in the operating room or the recovery room and repeated cardiac arrest and finally died within 24 hr postoperative period.

Based on the consensus of the three members of investigators, the 10 most common main causes

Table 7. Contributing factors, factors minimizing incidents and suggested corrective strategies of anesthesia (directly and partially) related death (n=94)

Contributing factors		
Inappropriate decision	48	(51.1%)
Inadequate knowledge	16	(17.0%)
Lack of experience	43	(45.7%)
Anesthesia practice in rush manner	8	(8.5%)
Communication failure	8	(8.5%)
Emergency	37	(39.4%)
Inadequate preoperative preparation	13	(13.8%)
Inadequate equipment	8	(8.5%)
Malfunction of equipment	6	(6.4%)
Factors minimizing incidents		
More experience	49	(52.1%)
More experience teamwork	33	(35.1%)
Vigilance	56	(59.6%)
Good consultation or supervision	25	(26.6%)
Effective communication	20	(21.3%)
Improvement of training	9	(9.6%)
Adequate equipment	2	(2.1%)
Good equipment maintenance	1	(1.1%)
Continual equipment check	1	(1.1%)
Suggested corrective strategies		
Practice guidelines	22	(23.4%)
Additional training	25	(26.6%)
More manpower	10	(10.6%)
Improvement of supervision	50	(53.2%)
Improvement of communication	27	(28.7%)
Quality assurance activity	76	(80.9%)
Good referral system	11	(11.7%)

of death were, namely : exangination (42.0%), severe traumatic brain damage (14.0%), sepsis (14.0%), heart failure (5.0%), hypoxemia (5.0%), nontraumatic central nervous system injury (4.0%), prolonged shock (2.0%), suspected myocardial ischemia or infarction (2.0%), multiple trauma (2.0%) and hypoventilation (2.0%), respectively. These epidemiological data can be used for priority setting for surgical management in Thailand. The surgery-related incidence, patients condition related and system management related per 10,000 cases were 3.7 (95% CI 2.8-4.7), 24.4 (95% CI 22.0-26.8) and 6.4 (95% CI 5.1-7.6), respectively. There were 28 cases or 1.7 cases (95% CI 1.1-2.3) per 10,000 and 66 cases or 4.0 cases (95% CI 3.1-5.0) per 10,000 cases of anesthesia directly and partially related death, respectively; compared to the incidence of anesthesia related mortality of 1 per 130,000 anesthetics in Lagasse s study and were much higher than incidence of death solely, attributable to anesthesia of 1 : 200,000 in Eichhorn s study. There were 5.0 cases (95% CI 3.9-6.0) per 10,000 cases of preventable perioperative death which was comparable to some studies[23-25], but was higher than 1 : 48748 anesthetics in Dutch teaching hospital.[26] We agree with Lagasse s review that a wide range of perioperative mortality and other statistics are probably caused by differences in operational definitions and reporting sources, as well as a lack of appropriate risk stratification.[22]

Of ninety-four cases of anesthesia (partially and directly) related perioperative death, the five most common services of these patients were general abdominal surgery, neurosurgery, cardiothoracic surgery, general non abdominal surgery and orthopedics surgery. The five most common sites of operation were : the upper abdomen, the extremities, the head, the thorax and the lower abdomen respectively. Surgery of the

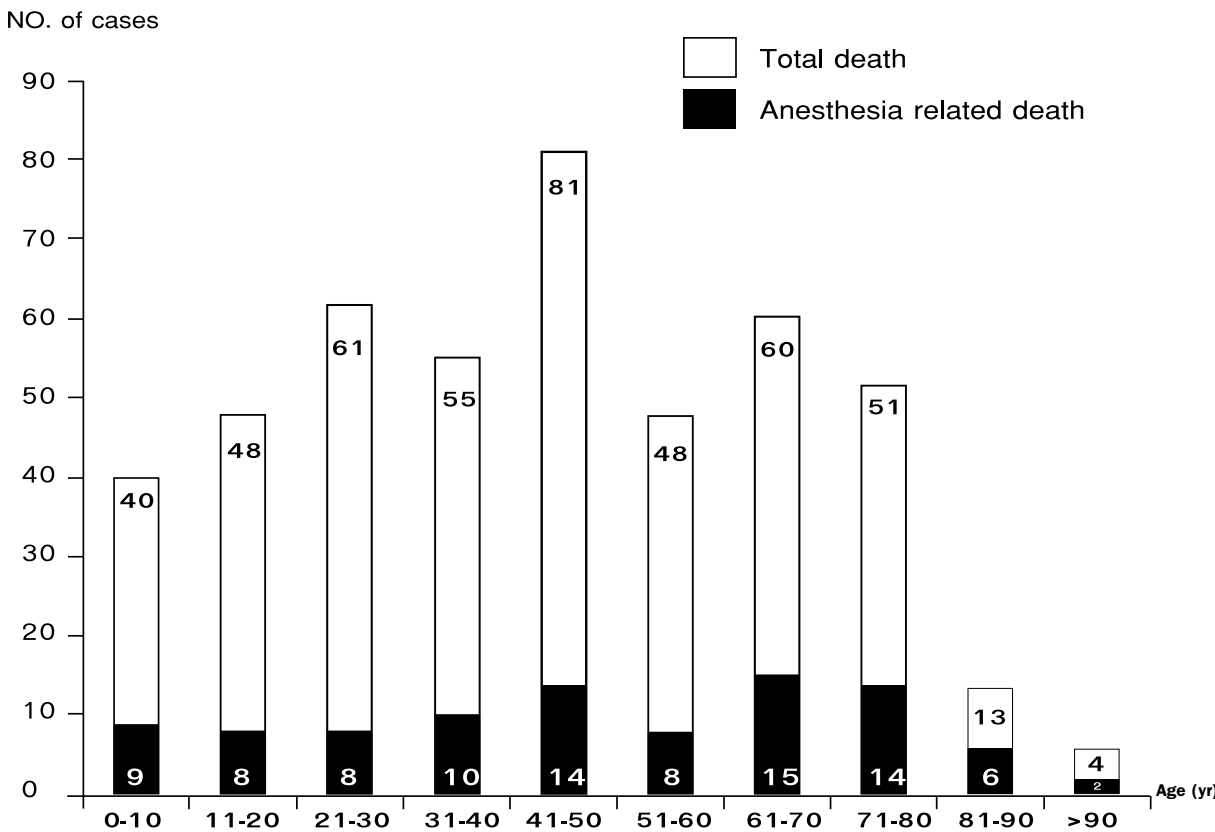

Fig 1. Age groups of anesthesia (directly and partially) related death and total perioperative death

trachea and neck were also considered to be risky.

According to the phase of anesthesia (Figure 2), it was judged that occurrence of events leading to anesthesia related death occurred most frequently in postoperative period, maintenance and induction phases respectively. The anesthesia related problems most frequently pertained to medication related events especially relatively anesthetic overdose. Others common problems were, namely : uncontrolled hemodynamic status, exangination, uncontrolled hypoxia such as loss of airway control or unable to ventilate, too early extubation and in appropriate postanesthesia care. There were few cases of total spinal block, inadequate central line monitoring, endobronchial intubation, pulmonary embolism, pulmonary aspiration, inadequate preoperative assessment, probable vagal reaction and complication associated with central venous access. Therefore continuous medical education in anesthesia should be emphasized on medication related events, cardiovascular management and respiratory management. Appropriate operative assessment and preparation, setting of postanesthesia care unit, intensive care unit, improvement of blood bank and increasing number of MD anesthesiologists were systemic or management solution for policy-maker.

It was judged that human failure mainly comprised : inappropriate decision making (51.0%), lack of experience (45.7%), inadequate knowledge (17.0%), inadequate preoperative preparation (13.8%), communication failure (8.5%) and anesthesia practice in rush manner (8.5%) were major contributing factors of anesthesia related death. Emergency condition (39.4%) and equipment failure [inadequate equipment (8.5%) and malfunction of equipment (6.4%)] were other contributing factors. Vigilance (59.6%), more experience (52.1%), more experience teamwork (35.1%), improvement of consultation or supervision (26.6%) and effective communication were judged to be common factors

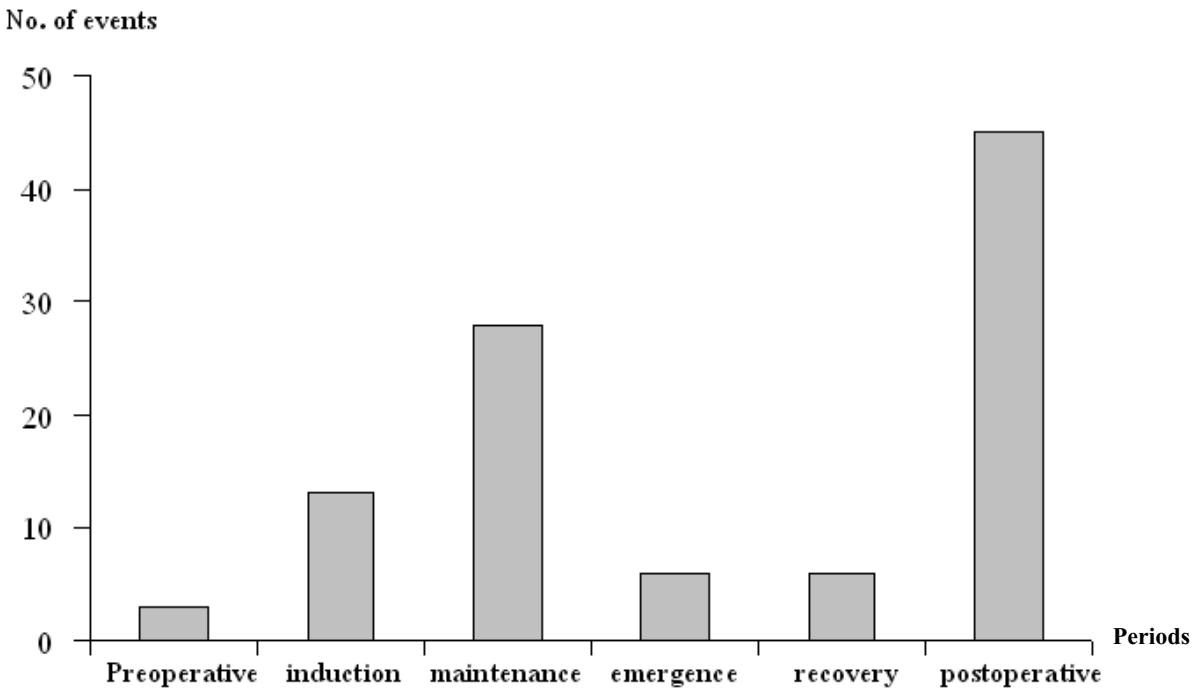

Fig 2. Occurrence of events of anesthesia related death according to phase of anesthesia (n=94)

that could minimize the incidents. For suggested corrective strategies, quality assurrance activity such as morbid-mortality conference, quality round or peer review of incidents were judged to have major role. Other strategies were, namely : improvement of supervision, improvement of communication, additional training, practice guidelines, good referral system and increasing manpower.

In summary, current data suggests that the overall perioperative mortality rate for patients having ASA PS 1-5 is approximately 1:354 which is consistent with earlier reports on perioperative mortality rates using the same definition and similar mandatory reporting. Our data further suggest that the anesthesia solely related mortality rate, as determined by peer review is approximately 1.7 per 10000. Patient disease and emergency condition are the main risk factors of perioprative death. Quality assurance activity, prevention of human and equipment failure, systemic management perioperative care, development of postanesthesia care unit, availability of intensive care unit, efficient blood bank, and adequate MD anesthesiologists are suggested corrective strategies to improve quality and safety of anesthesia service in Thailand.

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การศึกษาอุบัติการณ์การเสียชีวิตหลังให้ยาระงับความรู้สึกสำหรับการผ่าตัดในประเทศไทย : การวิเคราะห์ปัจจัยเสี่ยง

สมรัตน์ จารุลักษณานันท์, ฐิติมา ชินะโชติ, อักษร พูลนิติพร, ศิริลักษณ์ กล้าณรงค์, อรลักษณ์ รอดอนันต์, สุรศักดิ์ ถนัดศีลธรรม

ที่มาและเหตุผล: *ปัจจุบันยังไม่มีข้อมูลทางสถิติขนาดใหญ่ของการเสียชีวิตและภาวะแทรกซ้อนทางวิสัญญีในประเทศไทย จึงเห็นสมควรทำการศึกษาสาเหตุของการเสียชีวิต และภาวะแทรกซ้อนดังกล่าวในระดับชาติ*

วัสดุและวิธีการ: *การศึกษาอุบัติการณ์สภาวะแทรกซ้อนทางวิสัญญีในประเทศไทย (THAI Study) จากข้อมูลผู้ป่วยระหว่าง 1 กุมภาพันธ์ พ.ศ. 2546 ถึง 31 มกราคม พ.ศ. 2547 รวมจำนวนผู้ป่วย 163,403 ราย ซึ่งเสียชีวิตระหว่างการให้ยาระงับความรู้สึกสำหรับการผ่าตัด จนถึง 24 ชั่วโมงภายหลังการผ่าตัด เพื่อวิเคราะห์หาปัจจัยเกี่ยวข้อง*

ผลการศึกษา: *อุบัติการณ์ของการเสียชีวิตภายใน 24 ชั่วโมงหลังการผ่าตัด, การเสียชีวิตอันเกี่ยวเนื่องโดยตรงกับวิสัญญี, การเสียชีวิตอันเกี่ยวเนื่องกับวิสัญญีบางส่วนเท่ากับ 28.2 (ความเชื่อมั่น 95% 25.7-30.8), 1.7 (ความเชื่อมั่น 95% 1.1-2.3) และ 4.0 (ความเชื่อมั่น 95% 3.1-5.0) ต่อ 10000 ราย ตามลำดับ จากจำนวนผู้เสียชีวิตทั้งหมด 462 ราย ; 28 ราย (6.5%), 66 ราย (14.3%), 61 ราย (13.3%), 399 ราย (86.7%) และ 104 ราย (22.6%) ได้รับการพิจารณาว่าเป็นการเสียชีวิตเกี่ยวเนื่องโดยตรงจากวิสัญญี, เกี่ยวเนื่องบางส่วนจากวิสัญญี, เกี่ยวกับการผ่าตัด, เกี่ยวกับภาวะโรคของผู้ป่วย และเกี่ยวกับปัญหาเชิงระบบ หรือการจัดการตามลำดับ สาเหตุการตายที่พบบ่อยได้แก่ เสียเลือดมาก (42.4%), บาดเจ็บศีรษะอย่างรุนแรง (14.3%), ภาวะติดเชื้อ (13.6%), หัวใจล้มเหลว (5.0%) และภาวะขาดออกซิเจน (5.0%)*

สรุป: *อุบัติการณ์เสียชีวิตใน 24 ชั่วโมงหลังการผ่าตัด เท่ากับ 1:354 สอดคล้องกับการศึกษาอื่น กิจกรรมประกันคุณภาพบริการ, การป้องกันความผิดพลาดของมนุษย์, การจัดการปัญหาขาดแคลน หรือเครื่องมือผิดพลาด, การปรับปรุงระบบอันได้แก่ การพัฒนาการดูแลผู้ป่วย, การจัดหาห้องพักฟื้น หออภิบาลผู้ป่วยวิกฤต การพัฒนา คลังเลือด และการเพิ่มจำนวนวิสัญญีแพทย์ให้เพียงพอ เป็นข้อเสนอแนะในการแก้ หรือลดปัญหาการเสียชีวิต จากการผ่าตัด*